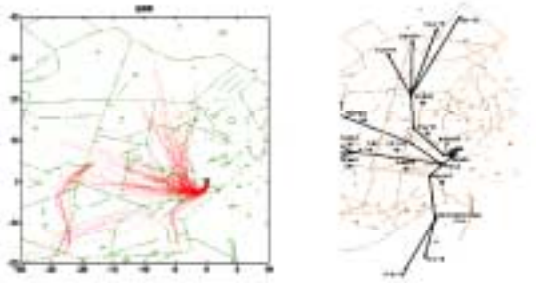
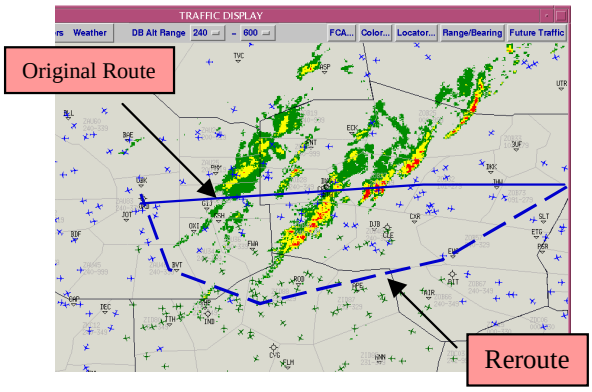
EW-2: Respond Effectively to Hazardous Weather

Timely identification of en route impacts, improved route predictability, and improved route flexibility through more alternative routes.



Terminal Area



En Route

Background

Today's route management remains relatively inflexible due to rigid airspace design, continued use of ground based Navaids, and incompatible databases and automation systems between users flight plan systems, FAA HOST requirements, and aircraft navigation systems. Flight plan route changes are workload intensive for all stakeholders resulting in increased flight delays, and cancellations. Advanced aircraft navigation systems have remained largely unused due to an inflexible airspace structure. Poor communication of route and airspace status continues to plague the system resulting in inefficient use of available resources. Additionally, the inability to communicate flight plan changes quickly and in bulk for major traffic flows also slows the process.

Ops Change Description

Operationally, route management will become a simplified task for all stakeholders. Common identification of impacted airspace utilizing tools such as the Collaborative Convective Forecast Product (CCFP) to identify weather impacts in concert with tools such as the Flow Constraint Area (FCA) tool, highlight the problem. Activating alternative route options utilizing the National Playbook or Coded Departure Routes ensure a quick implementation of a solution. The development of alternative routes including area navigation (RNAV), low altitude routes, and use of available military airspace, will make airspace available during situations where normal routes are congested or impassable due to weather conditions.

Route management should be a collaborative effort between the FAA and users to ensure safety of flight (relative to fuel, hazardous weather, etc.) as well as to ensure that traffic volume and complexity concerns are considered to ensure safe separation of aircraft from aircraft. The roles and responsibilities for route management are a key element in the S2K+1 field-training package.

Benefit, Performance and Metrics

- Improved predictability in delay, cancellation, and en-route time calculations.

- Increase on-time departure and arrival goals.
- Reduction of gridlock conditions due to limited routing solutions.
- Reduction of Miles in Trail due to efficient use of available airspace resources.
- Decrease in block times.
- Reduction in variance of execution against plan.
- Reduce fuel consumption due to extended rerouting options which maximize throughput in areas closest to the Users Preferred Trajectory (UPT).
- Reduction in flight diversions due to extensive re-route only options.

Scope and Applicability

Near-Term:

- Collaboration for identifying airspace constraints, and routing solutions utilizing DSS tools such as the Flow Contraint Area (FCA) tool and the Common Contraint Situation Display (CCSD) tool.
- S2K+1 strategic planning process, and efficient access to Canadian and Military airspace.
- Continued use and development of the Playbook for expanded options.
- Coded Departure Routes (CDRs) provide options for departure that are pre-coordinated and pre-defined so that user and FAA systems can accept them with little or no modification.
- The Low Altitude Arrival and Departure Routing (LAADR) program provides options for use of low altitude routes in situations where their normal routes at higher altitudes are unavailable.
- The Tactical Altitude Assignment Program (TAAP) is part of the National Airspace Redesign Choke Points activities.
- Define local procedures for route management in the terminal domains utilizing tools such as Traffic Management Advisor (TMA).
- Establish system wide procedures for coordinating and communicating re-route strategies both in the strategic and tactical environments. Use of the National Log for internal ATS communication, machine readable ATCSCC advisory formatting for system wide dissemination, and additions to the ATCSCC web site (e.g., the diversion recovery page), will enhance all communication.

Mid- to Long- Term:

- Additional use of area navigation (RNAV) for departures, en-route and arrival routes.
- Use of U.S. domestic reduced vertical separation minima (RVSM).
- Improved communication of route status.
- Enhanced automation for re-route solutions (e.g., FCA reroute functions or URET).
- Free Flight Phases 1/2.

Key Decisions

- Aircraft performance efficiencies and cost of using low altitude routes.
- Cost/benefit analysis for aircraft equipage for RVSM implementation.
- Compatibility and integration of automation systems between NAS users and FAA HOST.
- How to hold users accountable for “not” allowing aircraft access to the system when needed. For example, aircraft are allowed to depart even when it is known they can’t land, then delays are counted as weather or ATC.
- Pursue local MOU's for LAADR usage.

Key Risks

- Limited availability of airspace in high volume situations that often occur in the northeast during severe weather.
- Arrival and departure routing within terminal areas is limited by what can be accommodated adequately within prior environmental studies.
- Major additions to routes in terminal areas require airspace design studies including environmental impact assessments.